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Bitcoin Is Only The Beginning For Blockchain Technology



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Talk to most people about Bitcoin and several things come to mind: [a secretive inventor](#), [illicit marketplaces](#) and [the failure of one of its largest exchanges](#). Not exactly the kind of images most entrepreneurs want to be associated with.

But it turns out that currency might not be the most exciting thing to come out of the Bitcoin craze. Instead, it's the technology that makes Bitcoin work, known as the blockchain, which will be truly revolutionary.

Before leaping ahead, a word on how Bitcoin works. Bitcoin, of course, is a digital currency that can be used like cash to pay for a [growing number](#) of goods and services. When someone uses Bitcoin to, say, buy a pizza, that transaction is recorded on a "block," or a file of data. Once a block is full (determined by time — on average every 10 minutes — rather than quantity), the next block to be created incorporates computer code that refers to the preceding block — thereby building a permanent string of records known as the blockchain.



Blockchain technology has implications beyond currency.

What makes the blockchain unique is that instead of using a centralized source, such as a traditional bank, to verify exchanges of Bitcoins, that certification is provided by an army of people worldwide called “miners.” The miners create secure blocks by lending their computing power to solve complex math problems. Each time one of these problems is cracked, a block is added to the chain — and the miners receive Bitcoins for their services. Because the computer code in each **universally time-stamped** block builds on the previous one, it becomes virtually impossible to go back and alter earlier blocks.

The intriguing aspect of this for entrepreneurs is that all kinds of other information could piggyback on the Bitcoin transfers recorded on the blockchain. One startup providing this type of service is **Proof of Existence**, which uses the blockchain to record a cryptographic digest of a document, validating that the user owns that file at that time. It could be useful for verifying material for copyrights or patents, for example. Another startup, **Onename**, provides customers with a

blockchain ID, a kind of digital passport they can use to verify their identities online. Ultimately, identity verification could lead to voting via smartphones.

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At professional-services firm Deloitte Canada, innovation specialist Matthew Spoke is leading a team investigating how blockchain or similar technologies might be used to make audits more precise. “Due to the large number of transactions and the amount of financial information a company has, audits never give you 100 percent coverage,” he explains. Instead, auditors choose a sample from a set of transactions, and they attempt to verify that the company being audited accurately stated its balances for that sample.

Using the blockchain, it could be possible to independently confirm a broader range of financial transactions for a company. In essence, both parties to a transaction would agree that an exchange took place, and that exchange would be securely recorded on the blockchain.

There are a lot of issues to work out, including regulatory approvals and the question of whether companies see value in broader audit guarantees. “There are very old accounting standards for how audits are done today,” Spoke acknowledges. “But we think that the premise of this can provide more certainty with significantly less effort.”

Obviously, there are concerns about whether the blockchain, as a broadly distributed network, is the best place to record companies’ private financial data. A number of businesses, Spoke says, are developing what might be called private blockchain solutions. In other words, they’re creating ledgers that incorporate a similar structure but can be accessed only by a select group. Big banks, for

example, might use a private distributed ledger to clear balances between themselves on a daily basis. This is what is known as permission-based blockchain; detractors argue that the point of Bitcoin is to have a distributed peer-to-peer transaction ecosystem where everyone has access but no one company or person controls it.

Nasdaq sees potential in using the blockchain to settle securities trades in a cheaper and more accurate manner. Later this year, [the financial exchange plans to launch](#) a service on its private-market platform that will record data on the blockchain [to help small companies keep track of shares and investors](#). It's working with Chain, a San Francisco-based startup that provides blockchain infrastructure to financial institutions. Chain helps banks and brokers settle funds more quickly which increases liquidity. Normally it takes, three business days to settle a stock transfer and three to five business days to settle a credit card transaction. That can happen almost instantaneously via the blockchain.

Blockchain technology could be useful for "any industry that needs an immutable record," says Peter Smith, CEO of Blockchain, a startup that has 4 million users of its Bitcoin wallet, a kind of private key that allows users to move Bitcoins around the blockchain.

"A lot of the challenge in financial services, logistics and trade finance is basically record-keeping," Smith adds. "Think about every time you've had something lost in the post. What if the thing you lost is worth several million dollars? Who has possession of it? Who knows?"

He sees interest in using blockchain architecture to track high-end industrial parts, where shipments can be valued in the millions, as well as rare metals and high-value agricultural products.

In some corners of the financial and insurance industries, there's concern that blockchain and other innovations [could upend traditional business models](#). Banks are trying to get ahead of the shift, running incubator and accelerator programs for fintech startups. [UBS opened a blockchain research lab](#) in April in a space at

London's Canary Wharf. IBM sponsored a [blockchain hackathon](#) in India last month.

Entrepreneurs who are intrigued by blockchain need to be aware of the technical challenges. Developers are having a fierce fight about whether to [increase the amount of data](#) that can be stored on each block, to accommodate the growing daily volume of transactions. And there have been problems with miners [generating invalid blocks](#) and [hackers stealing Bitcoins](#), though Bitcoins are only as secure as the security of the private keys rather than the security of the Bitcoin ecosystem.

Also, keep in mind that many of these blockchain applications are years away from causing widespread disruption. "It's somewhat trivial to conceptualize things, but it's harder to put them into production," Blockchain CEO Smith says. "The most important thing to remember is that it's still very much a large-scale experiment."

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I am the Executive Director of CALinnovates, a technology advocacy non-profit bridging the divide between entrepreneurs and government on issues such as infrastructure, the sharing economy, and open data. I'm a veteran strategist with extensive experience working at the loca... MORE